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Arduino 16x2 LCD Display and 4x4 Matrix Keypad

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In Embedded system design, matrix keypad (4x4, 4x3, 3x3 or 5x5) is used for key in the user inputs. Similarly character LCD display [16x2, 16x4, 20x2 or 20x4 LCDs] is used for indicating the system status / parameters. This intractable is about interfacing 16×2 LCD and 4x4 matrix keypad with Arduino microcontroller.

Parts and components

- Arduino Uno board
- 16x2 LCD
- 1 K ohm potentiometer
- 4x4 matrix keypad

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Step 1: Schematic

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- The 16x2 is very common type LCD, with two rows, and each row displays 16 characters of either 5x7 or 5x8 dot matrix characters.

- The LCD is available in a 16 pin package. It consists of back light and contrast adjustment function and each dot matrix has 5×8 dot resolution.

- The 16x2 LCD display is connected to the Arduino (A0,A1,A2,A3,A4,A5) analog IO pins, where those pins are configured as digital in / out, where LCD operates at 4 bit data mode.

- If the display is not visible, adjust the Contrast pot (1K), to make it visible.

- Matrix key pad is arranged by push button switches in rows and columns.

- In a simple technique, the 16 keys of matrix keypad is connected with 8 digital IOpins of Arduino.

- Usually the keypad scan procedure is

- The key is decoded through Column selection / Row read.

- Write HIGH to Column One. And keep rest of the Column to LOW.

- Scan (Read) the Row One to Row Four to find the key.

- Repeat until a key press (are multiple) is identified.

- The Row pins are connected to 5,4,3 and 2nd digital IO pins of Arduino.

- The Column pins are connected to 6,7,8 and 9th digital IO pins of Arduino.

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Step 2: Software

- The Arduino LiquidCrystal and Keypad library is used for displaying the status and detecting key press.
- The LCD displays the "KEYPAD LCD TEST" as welcome screen at the first line
- Number of seconds since start "SEC= 123" is displayed at the second line column one.
- The detected key is displayed at ("KEY= 5") second line column 9 on wards.

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```
Demonstrates the use a 16x2 LCD display and
4x4 LCD display.   T


The  Arduino circuit connection for LCD:

* LCD RS  pin to analog pin A0

* LCD  Enable pin to analog pin A1

* LCD D4  pin to analog pin A2

* LCD D5  pin to analog pin A3

* LCD D6  pin to analog pin A4

* LCD D7  pin to analog pin A5

The  Arduino circuit connection for MAtrix Key Pad:

* ROW1 pin  to digital pin 5

* ROW2 pin  to digital pin 4
```
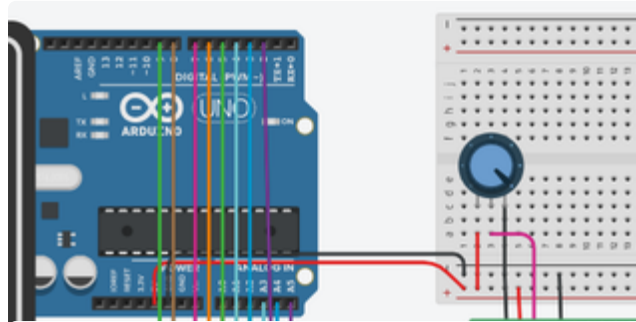
Conclusion

- The project is successfully simulated by using the Proteus.
- The Keypad and LCD display can be used for many embedded projects as user input and status display.

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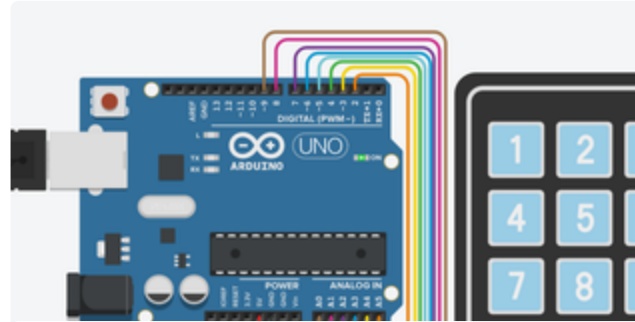
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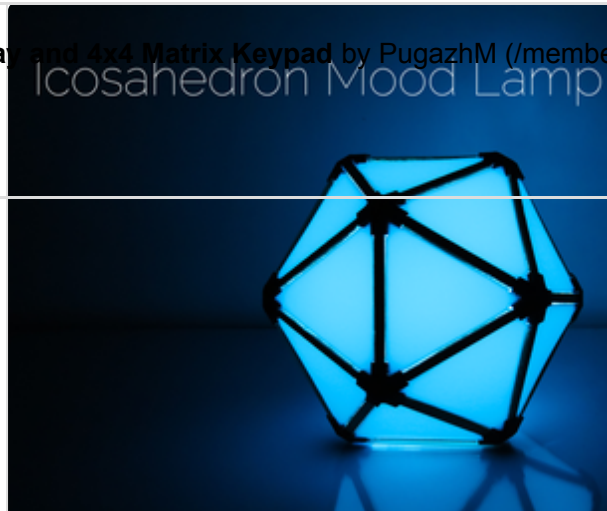
RGB Icosahedron Mood Lamp (/id/RGB-Icosahedron-Mood-Lamp/) by CraftDiaries (/member/CraftDiaries/) in LEDs
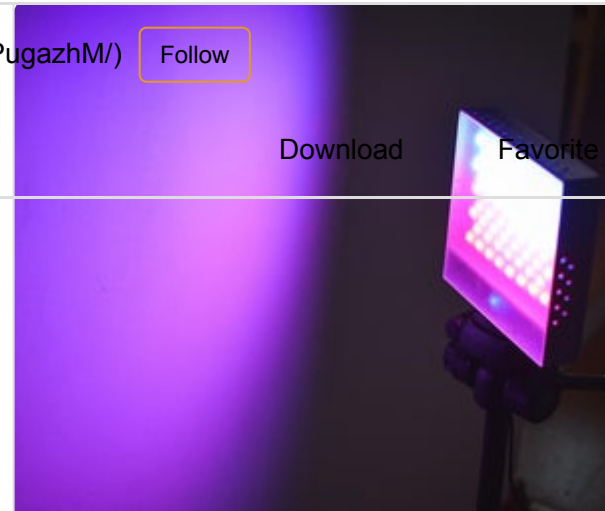
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(/member/thilak_hema/) thilak_hema (/member/thilak_hema/) 3 months ago | Reply | ▲ Upvote |

Oh! Tahts good, I'll send my works later too...

(/member/Edunikz/) Edunikz (/member/Edunikz/) 6 months ago | Reply | ▲ Upvote |

nice work !
I was having doubt regarding to the input taken from the keypad, please help me in taking input from
the keypad and the cursor should shift as i type it!

please reply me as fast as possible.
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thanks

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for some reason I cant find the right library

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code c'est pas bon

(/member/VenkateshU2/) VenkateshU2 (/member/VenkateshU2/) 2 years ago on Introduction

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Can I get above project with msp430g2553

(/member/whyareyoureadingthisstalker/) whyareyoureadingthisstalker
(/member/whyareyoureadingthisstalker/) 2 years ago

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NewPingExample:50: error: #include expects "FILENAME" or <FILENAME>
#include
^
NewPingExample:52: error: #include expects "FILENAME" or <FILENAME>
#include

^

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exit status 1

#include expects "FILENAME" or <FILENAME>

I copied and pasted the error code, Can you explain how to fix it?

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(/member/voltman/)   voltman (/member/voltman/) 2 years ago   [Reply]   [▲ Upvote]

I built this, but the sketch does not compile, there were multiple faults

This report would have more information with

"Show verbose output during compilation"

enabled in File > Preferences.

Arduino: 1.0.6 (Windows NT (unknown)), Board: "Arduino Uno"

sketch_oct13a.ino:50:12: error: #include expects "FILENAME" or <FILENAME>

sketch_oct13a.ino:52:12: error: #include expects "FILENAME" or <FILENAME>

sketch_oct13a:105: error: missing terminating ' character

sketch_oct13a:55: error: 'interface' does not name a type

sketch_oct13a:86: error: 'Arduino' does not name a type

sketch_oct13a:91: error: 'Arduino' does not name a type

sketch_oct13a:97: error: 'Keypad' does not name a type

sketch_oct13a.ino: In function 'void setup()':

sketch_oct13a:105: error: 'the' was not declared in this scope

sketch_oct13a:105: error: expected `;' before 'LCD'

sketch_oct13a:111: error: 'a' was not declared in this scope

sketch_oct13a:111: error: expected `;' before 'message'

sketch_oct13a.ino: In function 'void loop()':

sketch_oct13a:123: error: 'kpd' was not declared in this scope

sketch_oct13a:126: error: 'the' was not declared in this scope

sketch_oct13a:126: error: expected `;' before 'cursor'

sketch_oct13a:135: error: expected `;' before 'number'

sketch_oct13a:141: error: 'lcd' was not declared in this scope
sketch_oct13a:144: error: expected '(' before 'a'
sketch_oct13a:144: error: 'a' was not declared in this scope
sketch_oct13a:144: error: expected `;' before 'valid'

sketch_oct13a:171: error: expected primary-expression before '}' token
sketch_oct13a:171: error: expected `;' before '}' token
sketch_oct13a:171: error: expected primary-expression before '}' token
sketch_oct13a:171: error: expected `)' before '}' token
sketch_oct13a:171: error: expected primary-expression before '}' token
sketch_oct13a:171: error: expected `;' before '}' token

(/member/BilalS14/)   BilalS14 (/member/BilalS14/) 3 years ago   [Reply] [▲ Upvote]

Alhamdulliha! doing work.....

(https://cdn.instructables.com/ORIG/FV5/SUHN/J0487H0S/FV5SUHNJ0487H0S.jpg?
fit=bounds&height=1024&width=1024)

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yohanes trilaksono (/member/yohanes trilaksono/) 3 years ago

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